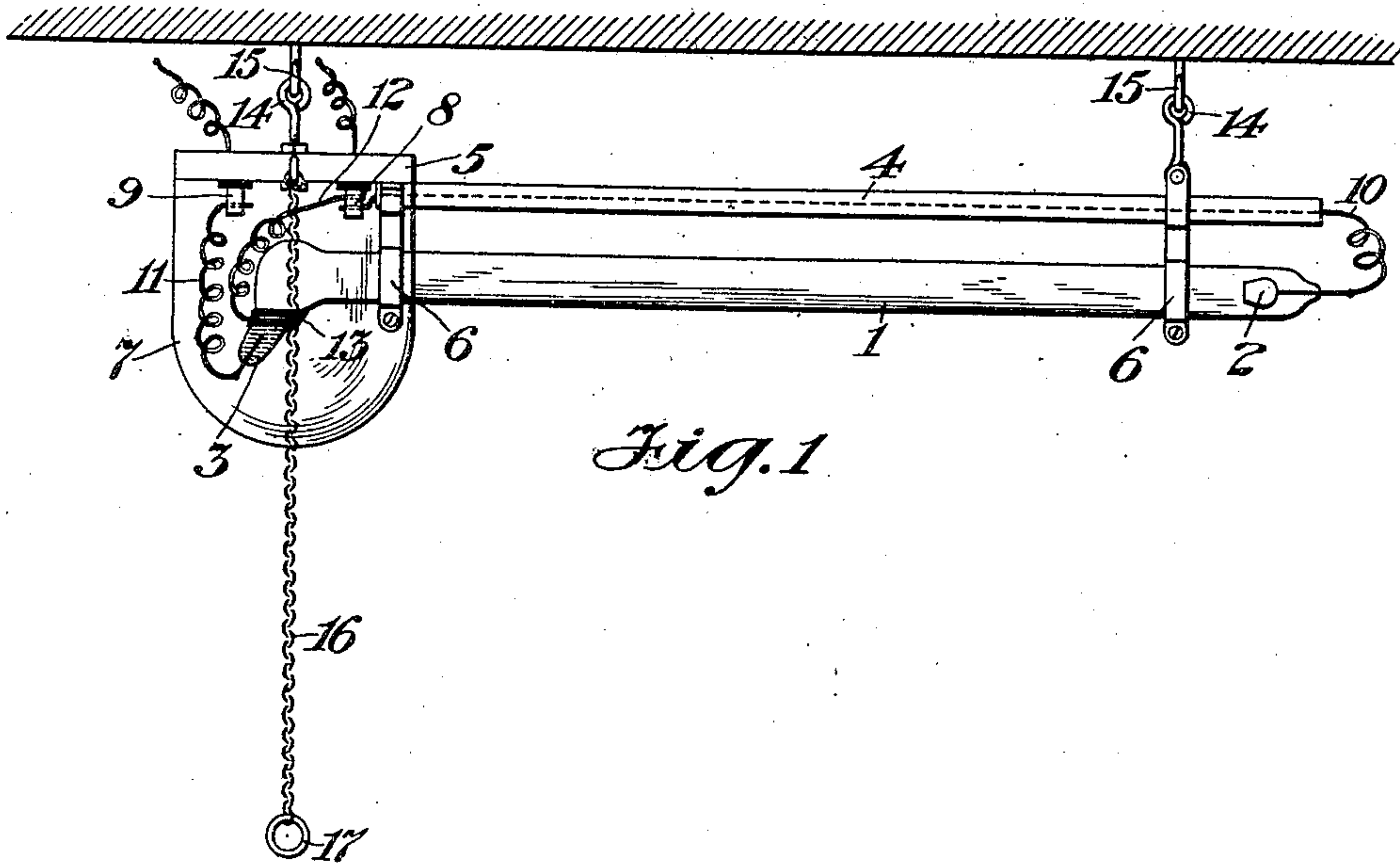


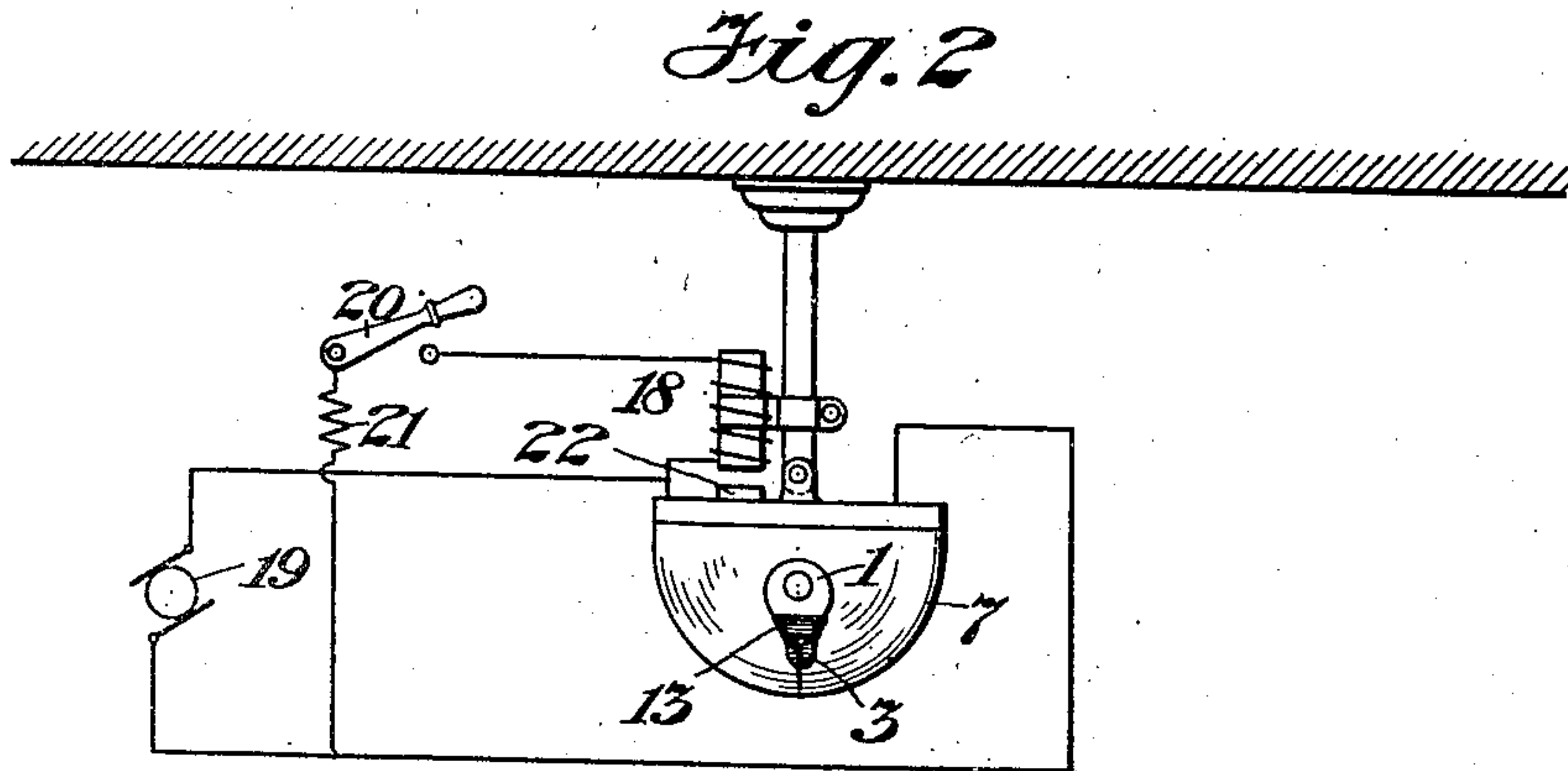
M. VON RECKLINGHAUSEN.  
VAPOR ELECTRIC APPARATUS.  
APPLICATION FILED NOV. 10, 1903.

984,707.

Patented Feb. 21, 1911.



*Fig. 1*



*Fig. 2*

Witnesses  
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# UNITED STATES PATENT OFFICE.

MAX VON RECKLINGHAUSEN, OF NEW YORK, N. Y., ASSIGNOR TO COOPER HEWITT ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## VAPOR ELECTRIC APPARATUS.

984,707.

Specification of Letters Patent. Patented Feb. 21, 1911.

Application filed November 10, 1903. Serial No. 180,509.

*To all whom it may concern:*

Be it known that I, MAX VON RECKLINGHAUSEN, a subject of the Emperor of Germany, and resident of New York, county of New York, State of New York, have invented certain new and useful Improvements in Vapor Electric Apparatus, of which the following is a specification.

It is found that gas or vapor electric apparatus such as typified, for example, by the well-known mercury vapor lamp, is sometimes subject to the difficulty that it will not readily start, even under the application of high potential, after it has been in use for several hundred hours. This applies particularly to vapor lamps in which the positive electrode is of iron. The difficulty can usually be overcome by shaking the lamp, and in practice, under those skilled in the operation of lamps of this class, it is customary to put the lamp in condition for starting by giving it a slight shock just before turning on the current or during the operation of applying the current.

Under some circumstances, as when the lamp is located near the ceiling or in some other more or less inaccessible place, there will be a difficulty in reaching the lamp for giving it the shock as described, and the present invention is designed to provide means whereby the required shock may be given without unnecessary trouble. To this end I may provide in connection with a mercury vapor lamp means for moving either the entire holder or a part of it or that part of it which supports the lamp proper, and such means may consist either of automatic devices such as an electro-magnet or of a cord or chain or their equivalent, whereby the shaking of the lamp is accomplished as a preliminary to the application of the high potential current.

My invention is illustrated in the accompanying drawing in which—

Figure 1 is a side elevation of a mercury lamp and its support together with a chain attachment for accomplishing the purpose of this invention; and Fig. 2 is an end view of a similar apparatus adapted to be operated by an electro-magnet.

Referring to the drawings, 1 is the body of a mercury vapor lamp consisting of a tube of glass or other transparent material. Within one end of the container 1 is an iron positive electrode, 2, and at or near the

other end of the container is a negative electrode, 3, of mercury. The lamp as suggested is of the well-known type and contains no features of novelty.

The holder proper for the lamp consists of a metallic tube, 4, one end of which is attached to a disk or plate, 5, located above one end of the lamp. The holder itself extends over the lamp proper and is attached to the lamp or container 1 by means of clamps illustrated at 6, 6. For protecting the end of the lamp which contains the negative electrode, I may employ a shield, 7, secured to the plate 5 by any suitable means. To the under side of the plate 5 I secure insulated cleats, 8 and 9, which constitute the means of connection for the lamp with the outside circuit. The cleat 8 is connected with an insulated wire, 10, which passes through the tube 4 and is connected at its remote end with the positive electrode 2, while the cleat 9 is connected by a wire, 11, with the negative electrode 3. The branch wire, 12, extends from the cleat 8 to the usual starting band, 13, in the neighborhood of the negative electrode. Above the holder proper are eyes, 14, 14, connected with the holder and adapted to engage upon hooks, 15, 15, depending from the ceiling or other suitable support.

The foregoing described well-known means for mounting mercury vapor lamps is shown in Fig. 1. I add to the apparatus described a chain, 16, which is connected to the disk or plate 5 at its upper end, and is provided at its lower end with a ring, 17, or the like, by means of which the chain can be pulled down to give a slight shake to the lamp holder and consequently to the lamp itself. For the chain 16 and the ring 17 any suitable mechanical device adapted for the same purpose may be substituted. In case the lamp is supported from the side wall instead of from the ceiling it may become necessary to provide slightly different connections for the cord or chain and it may also be convenient to employ one or more pulleys over which the said cord or chain might run. The operation is obvious. Just before applying high potential for starting the lamp or during the application of said current, the operator will pull down on the ring 17 and thereby cause a slight shaking to be given to the lamp through the medium of its holder 4. This is sufficient to put the



lamp in condition for starting in the usual way.

Referring to Fig. 2 it will be understood that the apparatus generally is the same as that already described. For shaking the holder and the lamp, however, I employ in this instance an electro-magnet, 18, included in a shunt circuit across the terminals of the source, 19. The shunt circuit includes a switch, 20, and a resistance, 21. Instead of operating the shaking devices mechanically, as in the apparatus illustrated in Fig. 1, the operator will close the switch 20, whereupon the magnet draws up one end of the holder and accomplishes the same result. For this purpose I may form on or attach to the disk or plate 5 an armature 22, adapted to cooperate with the core of the magnet 18.

The described means or their equivalent may be applied not only to a lamp or other vapor electric device which has become, so to speak, refractory through continued use, but also to a similar apparatus which is refractory from any other cause, as for example, by reason of some quality inherent in its original construction.

I claim as my invention:—

1. The combination of a horizontally supported bar, a vapor electric lamp and clamps for the said lamp supported from said bar and bearing upon a tubular portion thereof with means for rotating said lamp by said clamps, the axis of the movement being parallel to the axis of the lamp.
2. The combination with a mercury vapor

apparatus, comprising an exhausted container, one portion of which is a straight tube, suitable electrodes in said container, one of which is a vaporizable reconstructing liquid, of means for oscillating said container on an axis parallel to the axis of said tube and located thereabove, together with electrical connections for operating said apparatus.

3. The combination with a mercury vapor apparatus, comprising an exhausted container, one portion of which is a straight tube, suitable electrodes in said container, one of which is a vaporizable reconstructing liquid, of automatic means for oscillating said container on an axis parallel to the axis of said tube and located thereabove, together with electrical connections for operating said apparatus.

4. The combination with a vapor electric apparatus comprising an exhausted container, one portion of which consists of a straight tube and suitable electrodes therein, one of which is a liquid cathode, of a starting band located outside said container and adjacent said cathode, together with means for rotating said apparatus on an axis parallel to said tube.

Signed at New York, in the county of New York, and State of New York, this 24th day of October, A. D. 1903.

MAX VON RECKLINGHAUSEN.

Witnesses:

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